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PATENT APPLICATION
TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. PO4367USO
First Inventor or Application Identifier ERIESEN, Garry D.
Title SEED WEIGHING AND TRANSPORT TENDER
Express Mail Label No. EL515382463US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☒ * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ Specification [Total Pages 8]
(preferred arrangement set forth below)
- Descriptive title of the invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the invention
 - Brief Summary of the invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 6]
4. Oath or Declaration [Total Pages 2]
- a. ☒ Newly executed (original or copy)
- b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 16 completed)
- i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting
inventor(s) named in the prior application,
see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

5. ☐ Microfiche Computer Program (Appendix)
6. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
- a. ☐ Computer Readable Copy
- b. ☐ Paper Copy (identical to computer copy)
- c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. ☐ Assignment Papers (cover sheet & document(s))
8. ☐ 37 C.F.R. § 3.73(b) Statement of Power of Attorney
(when there is an assignee)
9. ☐ English Translation Document (if applicable)
10. ☒ Information Disclosure Statement (IDS)/PTO-1449 [X] Copies of IDS Citations
11. ☐ Preliminary Amendment
12. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
13. ☒ * Small Entity Statement(s) [] Statement filed in prior application,
(PTO/SB/09-12) Status still proper and desired
14. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
15. ☒ Other: ~~CERTIFICATE EXPRESS MAIL~~

* NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

16. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: _____

Prior application information: Examiner _____ Group / Art Unit: _____

For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

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(Insert Customer No. or Attach bar code label here)

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Signature	<i>Kirk M. Hartung</i>	Date	2/4/00

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Applicant or Patentee: GARRY D. FRIESEN

Serial No. or Patent No: _____

Filed or Issued: _____

For: SEED WEIGHING AND TRANSPORT TENDER

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) AND 1.27(b)) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.97(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled SEED WEIGHING AND TRANSPORT TENDER inventor(s) Garry D. Friesen described in:

☒ the specification filed herewith

☐ application Serial No. _____, filed _____

☐ Patent No. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, grant, conveyed or licensed or am under an obligation under contract or law to assign, grant, convey or license any rights in the invention is listed below:

☐ no such person, concern or organization

☒ persons, concerns or organization listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27).

FULL NAME Friesen of Iowa Inc.

ADDRESS 2897 Expansion Boulevard, Storm Lake, Iowa 50588

☐ INDIVIDUAL

☒ SMALL BUSINESS CONCERN

☐ NONPROFIT ORGANIZATION

FULL NAME _____

ADDRESS _____

☐ INDIVIDUAL

☐ SMALL BUSINESS CONCERN

☐ NONPROFIT ORGANIZATION

FULL NAME _____

ADDRESS _____

☐ INDIVIDUAL

☐ SMALL BUSINESS CONCERN

☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of payment, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Garry D. Friesen

NAME OF INVENTOR

NAME OF INVENTOR

NAME OF INVENTOR

Signature of Inventor

Signature of Inventor

Signature of Inventor

Date

Date

Date

INVENTOR: **FRIESEN, GARRY D.**
TITLE: **SEED WEIGHING AND TRANSPORT TENDER**

BACKGROUND OF THE INVENTION

Conventional agricultural seed applications utilize two different carts for transporting seed to the field and from the field. In the spring, a seed cart is used to transport seed to a planter in the field. Normally, a seed cart does not have scales or load cells for weighing seed. In the fall, a yield cart is often used to test sample seeds harvested from the field. The yield cart includes load cells for weighing seed samples. The load cells in prior art yield carts have been mounted in the axles of the trailer. Thus, the load cells are subjected to rotational torque, which limits the speed of the yield cart to approximately 15 m.p.h. The conventional yield cart is not designed to transport harvested seed, but rather collects a relative small sample for testing and then discharges or dumps the tested seed into a larger wagon for transport.

Accordingly, a primary objective of the present invention is the provision of an improved cart which can be used in the spring and the fall for weighing and transporting seed at speeds of 50 m.p.h. or more.

Another objective of the present invention is a combination seed and yield cart which is useful in both the spring and the fall for transporting seed to and from the field and for weighing seed.

A further objective of the present invention is the provision of an improved cart having load cells for weighing seed wherein the cells are not subject to rotational torque.

Another objective of the present invention is the provision of a seed weighing and transport device having a trailer with a hopper removably mounted thereon for weighing and transporting seed.

These and other objections will become apparent from the following description of the invention.

SUMMARY OF THE INVENTION

A combination seed weighing and transport cart includes a trailer adapted to be hitched to a vehicle for towing, and a hopper removably mounted on the trailer. The hopper has one or more compartments for holding seeds and an auger for removing the seeds from the compartment. The hopper is supported on legs. The hopper is portable and includes load cells adjacent each of the legs so that the load cells are functional on any support surface, including the trailer, the ground, a floor, or a bed of a truck. The load cells are sandwiched between the hopper and the support surface, and are free from rotational torque. The hopper is adjustably mounted on the trailer.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the seed weighing and transport device of the present invention.

Figure 2 is a side elevation view of the device.

Figure 3 is a front end elevation view of the device.

Figure 4 is a rear end elevation view of the device.

Figure 5 is a plan view taken along lines 5-5 of Figure 2.

Figure 6 is an elevation view taken along lines 6-6 of Figure 5.

Figure 7 is a view taken along lines 7-7 of Figure 6.

DETAILED DESCRIPTION OF THE DRAWINGS

The seed weigh and transport tender device of the present invention is generally designated in the drawings by the reference numeral 10. The device 10 generally includes a cart or hopper 12 and a trailer 14.

The hopper includes an internal compartment for storing seeds. The compartment may be subdivided into two or more compartments for storing different seeds. The compartment or compartments discharge the seed into an auger 16 for removing the seed from the hopper 12 at a desired location. A motor 18 is provided for operating the auger 16. The auger 16 may be foldable with an appropriate hydraulic system for moving the auger between a folded position and a use position.

The hopper 12 is supported by legs 20. A frame 22 interconnects the legs 20. The frame 22 includes channels 24 for receiving the forks of a lift truck, such that the hopper 12 is portable and can be moved to and from the trailer 14.

A load cell 26 is fixed on the hopper frame 22 adjacent each of the legs 20. Thus, preferably, four load cells 26 are provided on the device 10. The load cells 26 are sandwiched between the hopper frame 22 and a support surface, such as the crossbars 28 of the trailer 14, the bed of a truck, a floor, or the ground.

As best seen in Figure 5, the hopper 12 is adapted to be removably mounted on the trailer 14 via mounting brackets 30. The mounting brackets 30 are permanently fixed to the hopper 12. One of the load cells 26 is fixed on each of the mounting brackets 30, as seen in Figures 6 and 7. The brackets 30 each include an elongated slot 32 extending longitudinally relative to the longitudinal axis of the trailer 14. The crossbars 28 of the trailer 14 have elongated slots 34 which extend laterally relative to the longitudinal axis of the trailer. Thus, the slots 32, 34 can

be aligned with longitudinal and lateral adjustability of the hopper 12 relative to the trailer 14. A conventional fastener, such as a nut and bolt assembly, is used to removably secure the mounting brackets 30 of the hopper 12 on the crossbars 28 of the trailer 14.

The removable connection between the hopper 12 and the trailer 14 enhances the versatility of the hopper. For example, the hopper 12 can be mounted on the trailer 14 or in the bed of a pickup truck to serve as a seed cart in the spring to deliver seed to a planter in the field. Since the load cells 26 are not subjected to rotational torque, safe speeds of at least 50 m.p.h. can be maintained without damage to the load cells.

Similarly, in the fall, the hopper 12 can be mounted on the trailer 14 or placed in the bed of a pickup truck and taken into the field to receive harvested seed samples for weighing. When the hopper 12 is not needed, it can be removed from the trailer 14 such that the trailer can be used for other needs.

Thus, the device of the present invention is useful as a combination seed and yield cart, with the hopper 12 being portable for use on the trailer 14 or on other support surfaces.

The preferred embodiment of the present invention has been set forth in the drawings and specification. Although specific terms are employed, these are used in a generic or descriptive sense only and are not used for purposes of limitation. Changes in the form and proportion of parts as well as in the substitution of equivalents are contemplated as circumstances may suggest or render expedient without departing from the spirit and scope of the invention as further defined in the following claims.

What is claimed is:

1.

A seed weighing and transport device, comprising:
a trailer adapted to be hitched to a vehicle;
a hopper removably mounted on the trailer, the hopper having
at least one compartment for holding seeds, an auger for
removing seeds from the compartment, and a plurality of
legs; and
a weighing system sandwiched between the trailer and the
hopper to weigh the seed in the hopper.

2.

The device of claim 1 wherein the weighing system
includes a plurality of load cells with one load cell being
adjacent each leg of the hopper.

3.

The device of claim 2 wherein the hopper includes a
frame extending between the legs and the load cells are
mounted on the frame.

4.

The device of claim 3 wherein the frame is adjustably mounted
to the trailer.

5.

The device of claim 1 wherein the hopper has two compartments
for seed.

6.

The device of claim 1 wherein the weighing system is
free from rotational torque when the trailer and hopper are
moved by the vehicle.

7.

The device of claim 1 wherein the hopper is laterally
and longitudinally adjustable with respect to the trailer.

8.

The device of claim 1 wherein the trailer includes laterally extending slots and the hopper includes longitudinally extending slots, with pairs of the lateral and longitudinal slots overlapping to receive bolts and thereby allow adjustable mounting of the hopper on the trailer.

9.

A combination seed and yield cart for transporting seed to and from a field, comprising:
a hopper with at least one seed compartment and a plurality of legs for supporting the hopper;
a load cell mounted adjacent each leg of the hopper;
a trailer adapted to be towed by a vehicle;
a hopper being removably mounted on the trailer; and
the load cells being operative when the hopper is mounted on the trailer and when the hopper is sitting on another support surface.

10.

The cart of claim 9 wherein the load cells are free from rotational torque.

11.

The cart of claim 9 wherein the hopper includes mounting brackets for adjustably mounting the hopper on the trailer.

12.

The cart of claim 9 wherein the hopper and the trailer both include slots which extend perpendicular to one another and overlap so as to receive mounting bolts to adjustably secure the hopper on the trailer.

13.

The cart of claim 9 wherein the load cells are fixed to the hopper for movement with the hopper when the hopper is removed from the trailer.

14.

The cart of claim 9 wherein the trailer includes an axle with wheels, the load cells being spaced from the axle so as to preclude any rotational torque on the load cells.

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ABSTRACT OF THE DISCLOSURE

A combination seed and yield cart is provided for transporting seed to and from the field. The cart includes a hopper with at least one seed compartment and legs for supporting the hopper on a support surface. A load cell is mounted adjacent each of the hopper legs. The hopper is adapted to be removably mounted on a trailer. The load cells are operative when the hopper is mounted on the trailer or on any other support surface. The load cells are free from rotational torque such that the cart can be moved at safe speeds of 50 m.p.h. or more.

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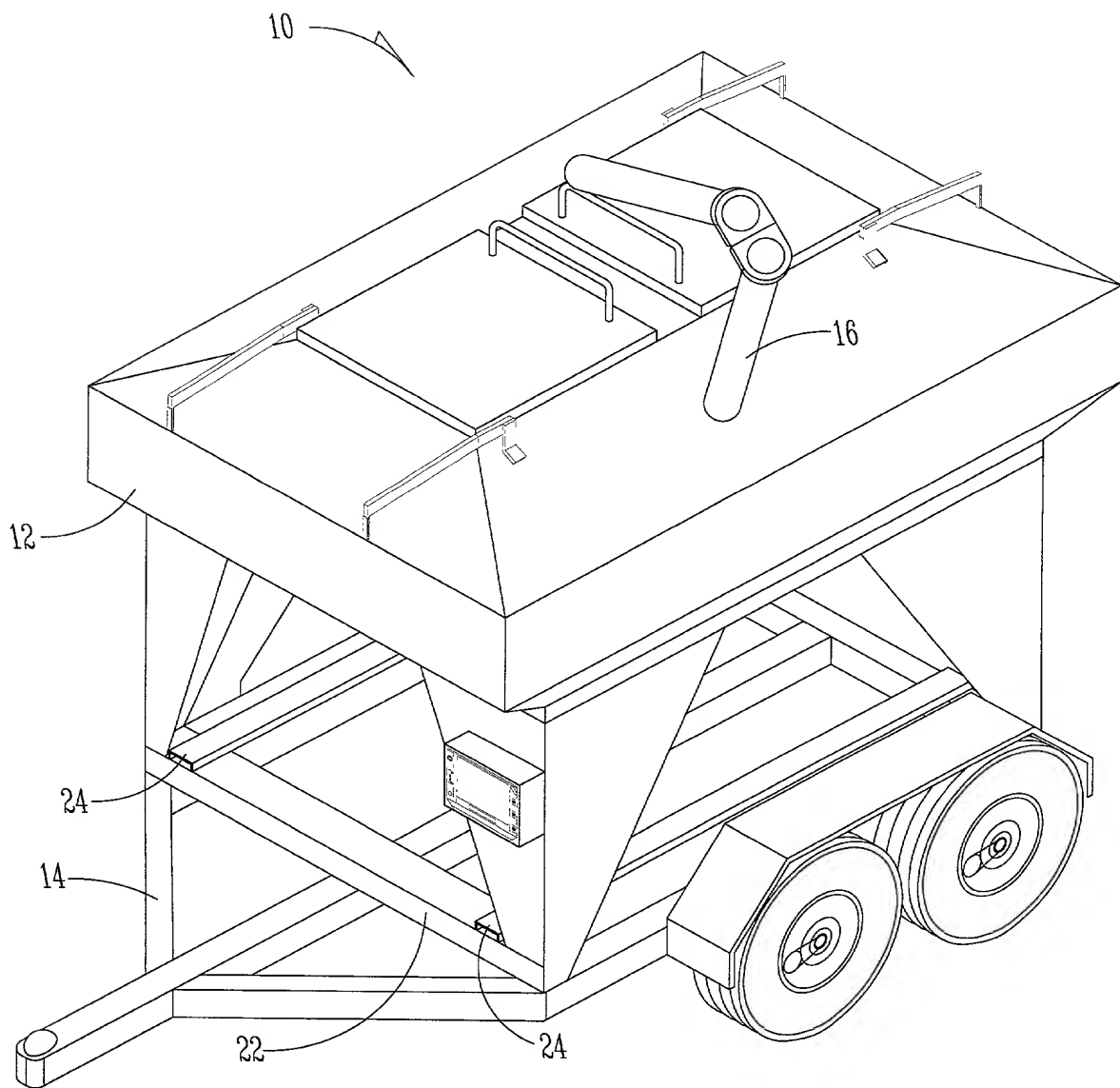


Fig. 1

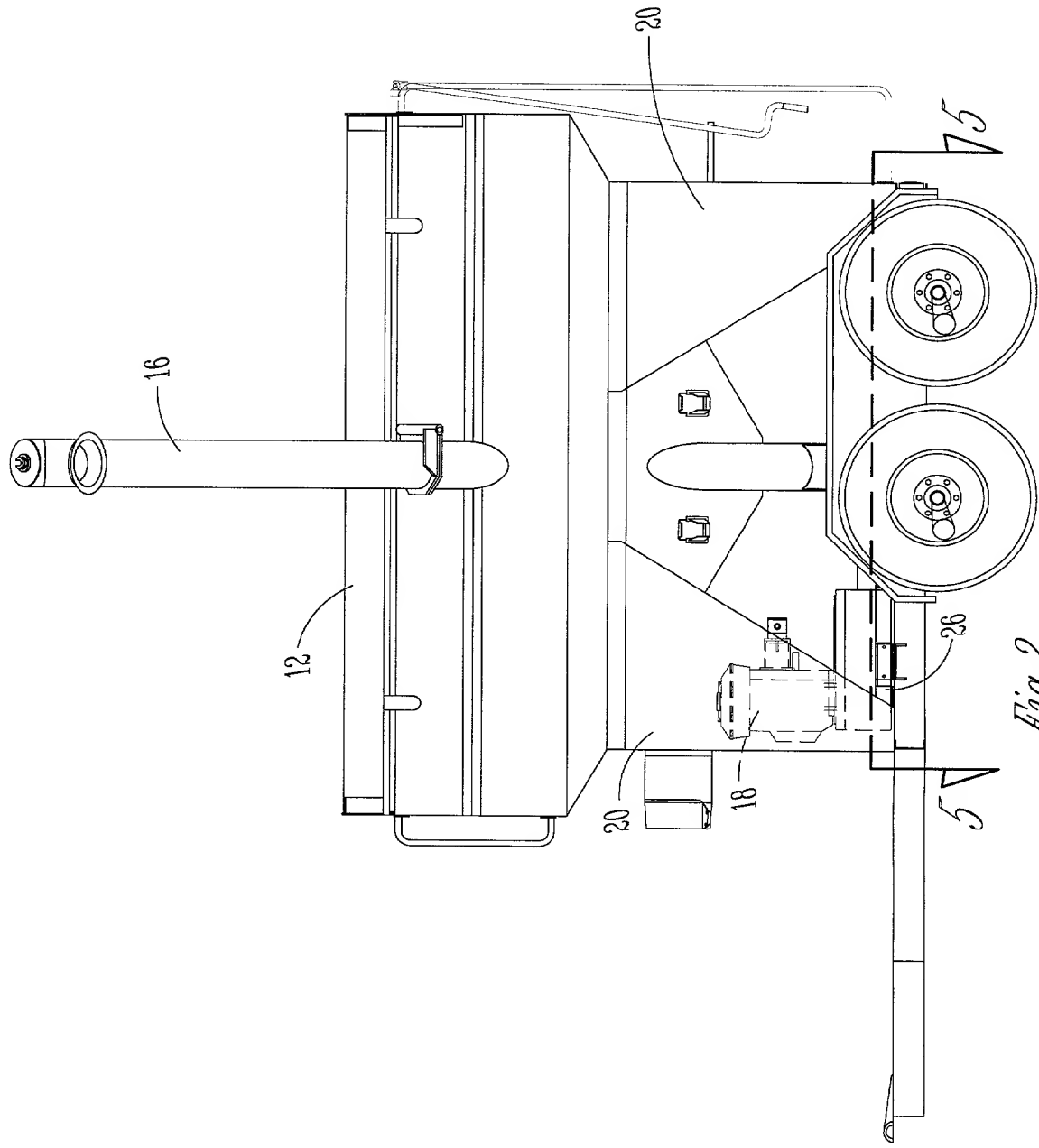


Fig. 2

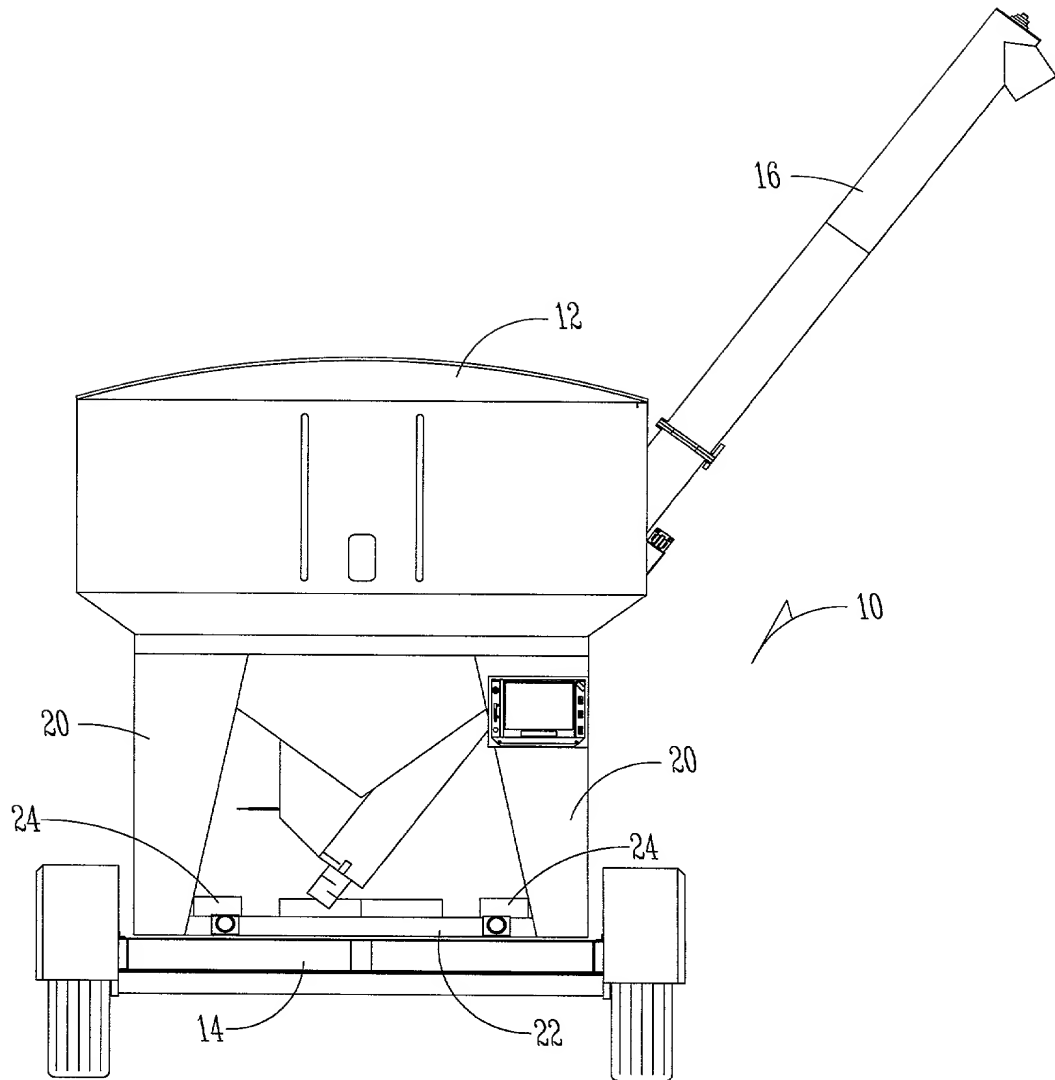


Fig. 3

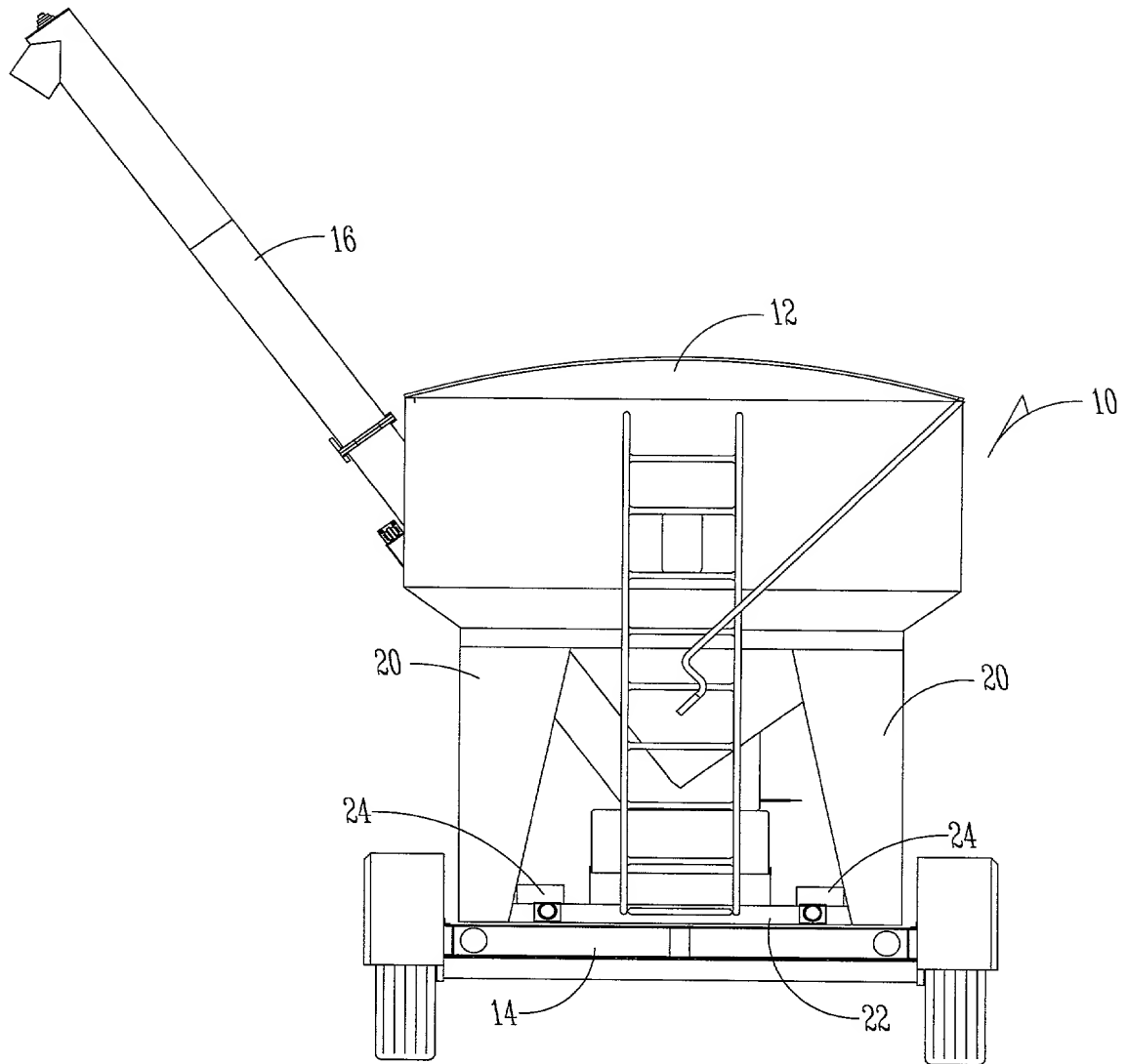


Fig. 4

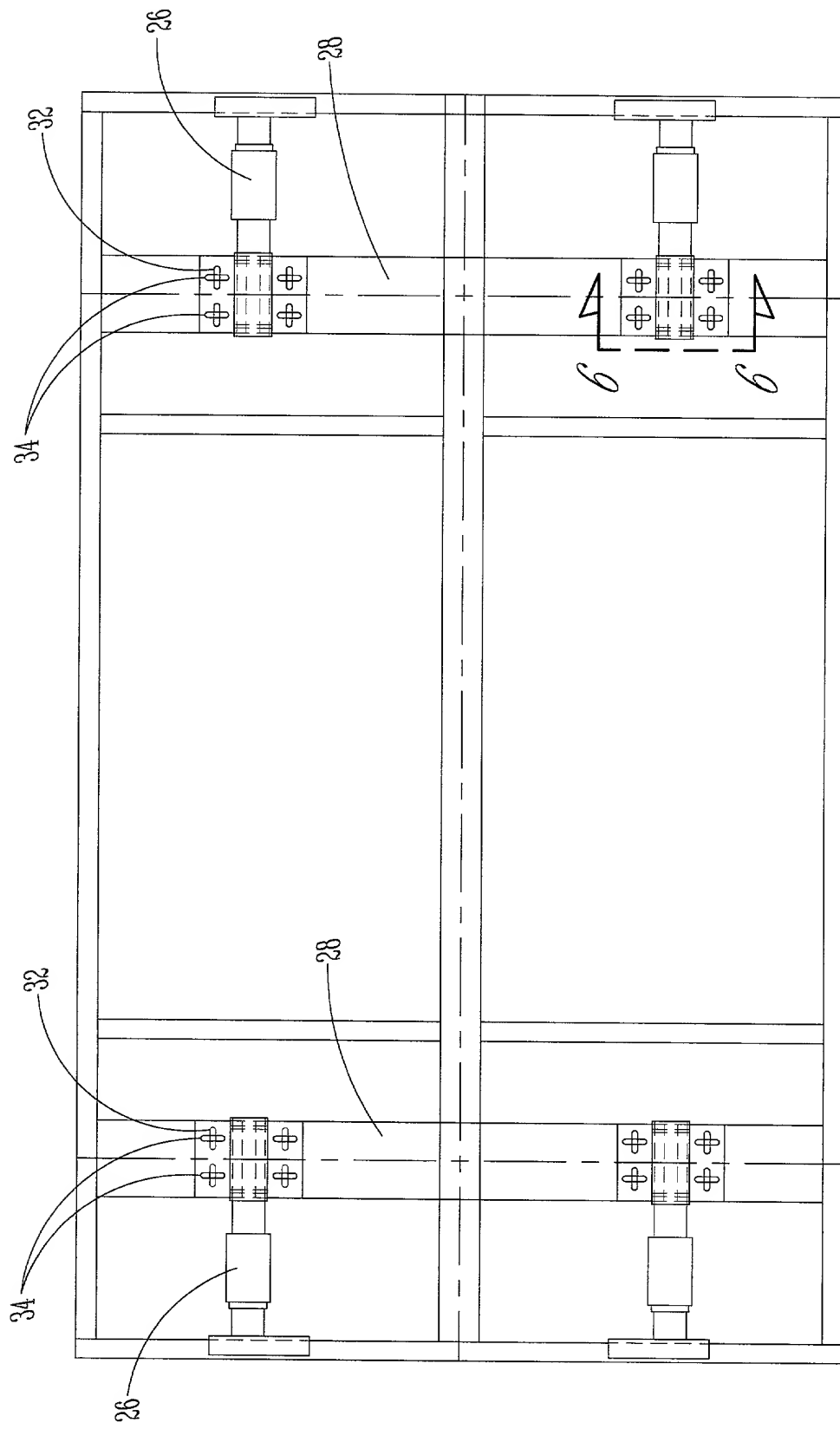


Fig. 5

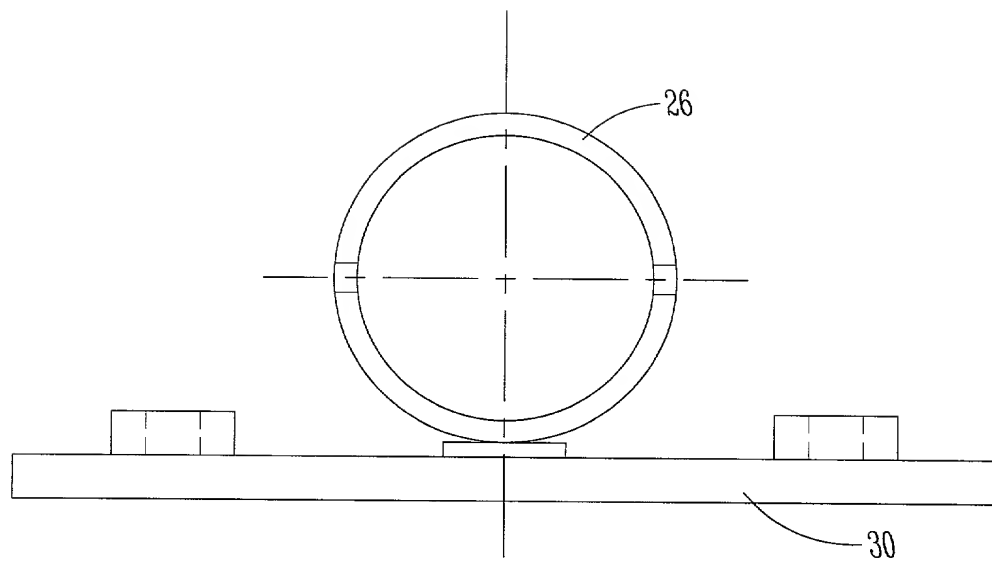


Fig. 6

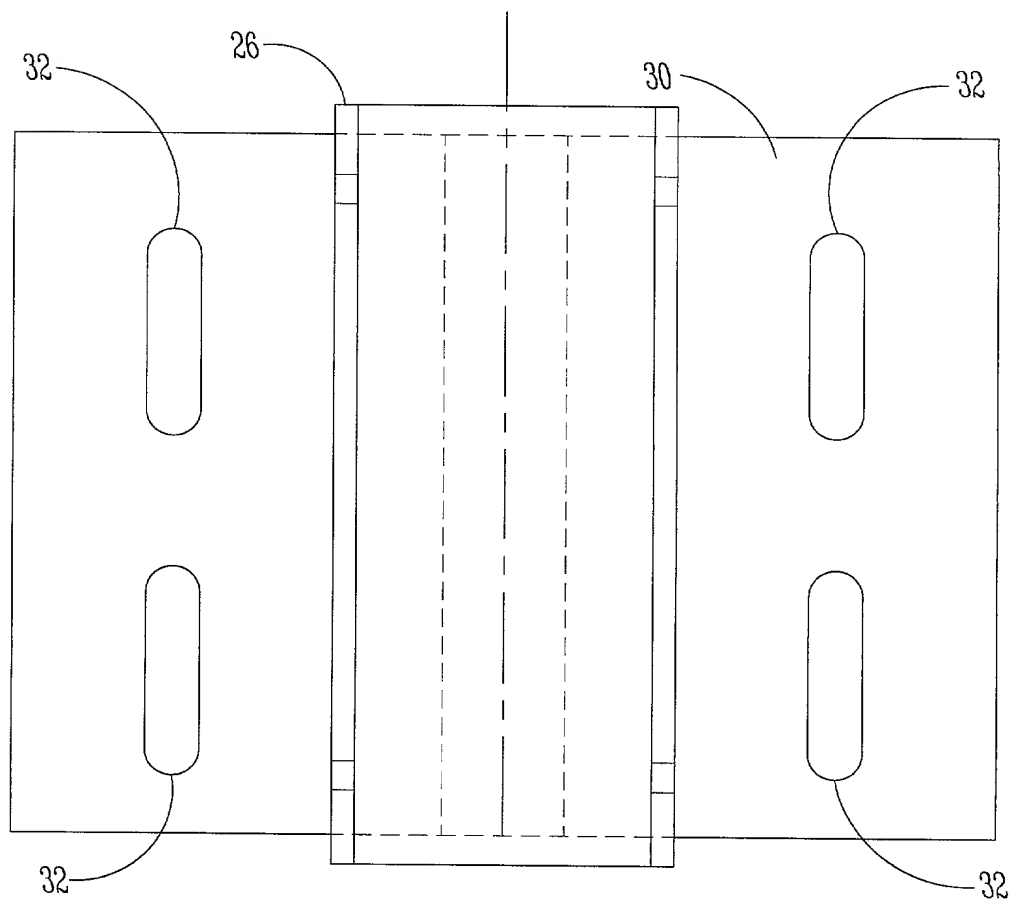


Fig. 7

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

COMBINED DECLARATION AND POWER OF ATTORNEY

FOR SOLE INVENTOR

As the below named inventor I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor, of the subject matter which is claimed and for which a patent is sought on the invention entitled as follows: **SEED WEIGHING AND TRANSPORT TENDER**, the specification and drawings of which are attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification and drawings, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code Of Federal Regulations, Section 1.56. I further declare that no application for patent or inventor's certificate on this invention has been filed by me, my legal representative or assigns in any country foreign to the United States of America except as identified below:

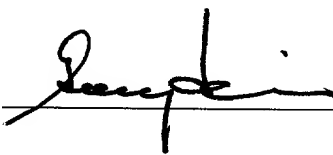
NONE.

And I hereby appoint ZARLEY, McKEE, THOMTE, VOORHEES & SEASE, comprising Donald H. Zarley, Registration No. 18,543; Bruce W. McKee, Registration No. 19,651; Dennis L. Thomte, Registration No. 22,497; Michael G. Voorhees, Registration No. 25,715; Edmund J. Sease, Registration No. 24,741; Mark D. Hansing, Registration No. 30,643; Kirk M. Hartung, Registration No. 31,021; Daniel J. Cosgrove, Reg. No. 36,770; Michael R. Crabb, Registration No. 37,298; Heidi Sease Nebel, Registration No. 37,361; Wendy K. Marsh, Registration No. 39,705; Jeffrey D. Harty, Registration No. 40,639; James A. Napier, Registration No. 42,025; Mark Ziegelbein, Registration No. 43,307; Patricia L. Ades, Registration No. 44,496; Timothy J. Zarley, Registration No. 45,253; Kirk Wilson Goodwin, Registration No. P-46,161; and R. Scott Johnson, Registration No. P-45,792; 801 Grand Avenue, Suite 3200, Des Moines, Iowa 50309, Telephone 515-288-3667, as my attorneys to prosecute this application and to transact all business in the Patent Office connected therewith.

I hereby declare that all statements made herein are of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE

Inventor's signature:



Date: 1/31/00

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This declaration ends with this page.

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